Prostaglandins, Leukotrienes and Essential Fatty Acids

VOLUME CONTENTS (VOLUME 66 2002)

Antitumour actions of highly unsaturated fatty acids: cell signalling and apoptosis 1
H. A. Leaver, M. T. Rizzo, I. R. Whittle

Antineoplastic properties of arachidonic acid and its metabolites 5
A. M. Monjazeb, C. E. Clay, K. P. High, F. H. Chilton

Characterization of cyclooxygenase-2 (COX-2) during tumorigenesis in human epithelial cancers: evidence for potential clinical utility of COX-2 inhibitors in epithelial cancers 13
A. T. Koki, N. K. Khan, B. M. Woerner, K. Seibert, J. L. Harmon, A. J. Dannenberg, R. A. Soslow, J. L. Masferrer

Antitumour and pro-apoptotic actions of highly unsaturated fatty acids in glioma 19
H. A. Leaver, H. S. Bell, M. T. Rizzo, J. W. Ironside, A. Gregor, S. B. Wharton, I. R. Whittle

Specificity of arachidonic acid-induced inhibition of growth and activation of c-jun kinases and p38 mitogen-activated protein kinase in hematopoietic cells 31
M. T. Rizzo, N. Pudlo, L. Farrell, A. Leaver

Signaling and proapoptotic functions of transformed cell-derived reactive oxygen species 41
G. Bauer

The role of arachidonic acid in normal and malignant hematopoiesis 57
M. T. Rizzo

PGE_2 receptors and synthesis in human gastric mucosa: perturbation in cancer 71
V. A. Takafuji, A. Evans, K. R. Lynch, J. K. Roche

Eicosapentaenoic acid and arachidonic acid: collaboration and not antagonism is the key to biological understanding 83
D. F. Horrobin, K. Jenkins, C. N. Bennett, W. W. Christie

Foreword

Endocannabinoids in the new millennium 91
V. Di Marzo

Discovery of endocannabinoids and some random thoughts on their possible roles in neuroprotection and aggression 93
R. Mechoulam

Cannabinoid receptors and their ligands 101
R. G. Pertwee, R. A. Ross

Molecular biology of cannabinoid receptors 123
B. Lutz

Endocannabinoid structure–activity relationships for interaction at the cannabinoid receptors 143
P. H. Reggio

CB_1 and CB_2 receptor-mediated signalling: a focus on endocannabinoids 161
S. D. McAllister, M. Glass

Biosynthesis and degradation of anandamide and 2-arachidonoylglycerol and their possible physiological significance 173
T. Sugiura, Y. Kobayashi, S. Oka, K. Waku

Cellular transport of anandamide, 2-arachidonoylglycerol and palmitoylethanolamide—targets for drug development? 193
C. J. Fowler, S. O. P. Jacobsson

The fatty acid amide hydrolase (FAAH) 201
D. G. Deutsch, N. Ueda, S. Yamamoto

Oxidative metabolism of endocannabinoids 211
K. R. Kozak, L. J. Marnett

Endocannabinoids in the central nervous system—an overview 221
E. Fride

Endocannabinoids in pain modulation 235
J. M. Walker, S. M. Huang

Endocannabinoids and pain: spinal and peripheral analgesia in inflammation and neuropathy 243
A. S. C. Rice, W. P. Farquhar-Smith, I. Nagy

Endocannabinoids and basal ganglia functionality 257
J. Fernandez-Ruiz, I. Lastres-Becker, A. Cabranes, S. González, J. A. Ramos

Endocannabinoids in cognition and dependence 269
A. H. Lichtman, S. A. Varvel, B. R. Martin

Neuromodulatory role of the endocannabinoid signaling system in alcoholism: an overview 287
B. S. Basavarajappa, B. L. Hungund

The role of endocannabinoids in the hypothalamic regulation of visceral function 301
T. Wenger, G. Moldrich

Endocannabinoids, hormone-cytokine networks and human fertility 309
M. Maccarrone, K. Falciglia, M. Di Rienzo, A. Finazzi-Agró

Endocannabinoids in the immune system and cancer 319
D. Parolaro, P. Massi, T. Rubino, E. Monti

Endocannabinoids and the gut 333
L. Pinto, R. Capasso, G. Di Carlo, A. A. Izzo

Cardiovascular pharmacology of anandamide 343
E. D. Högestätt, P. M. Zygmunt

The endocannabinoid system in invertebrates 353
M. Salzet, G. B. Stefano

Cannabinoid receptor-inactive *N*-acylethanolamines and other fatty acid amides: metabolism and function 363
H. H. O. Schmid, E. V. Berdyshev

Anandamide receptors 377
V. Di Marzo, L. De Petrocellis, F. Fezza, A. Ligresti, T. Bisogno

How blind is double-blind? A study of fish oil versus placebo 393
K. E. Damico, A. L. Stoll, L. B. Marangell, B. M. Cohen

Effect of ozagrel hydrochloride, a thromboxane synthetase inhibitor, on alcoholic beverage-induced bronchoconstriction in asthmatic patients 397
S. Myou, M. Fujimura, K. Nishi, T. Kita, K. Kurashima, H. Tachibana, Y. Ishiura, S. Nakao

Investigations into the mechanisms controlling prostaglandin production by the guinea-pig placenta: roles of calcium and gonadotrophin-releasing hormone 403
H. Aitken, N. L. Poyser

Prostaglandin E_2 9-keto reductase activity in bovine retained and not retained placenta 413
M. Kankofer, J. Wierciński, H. Zerbe

Effect of fatty acids on estradiol and testosterone binding to whole DU-145 prostate cells 419
S. E. Prinsloo, C. H. van Aswegen

Interleukin (IL)-17 enhances prostaglandin $F_{2\alpha}$-stimulated IL-6 synthesis in osteoblasts 427
H. Tokuda, O. Kozawa, T. Uematsu

Effects of *n*-3 polyunsaturated fatty acids on dermatitis in NC/Nga mice 435
R. Suzuki, T. Shimizu, T. Kudo, Y. Ohtsuka, Y. Yamashiro, K. Oshida

Urinary excretion of 8-iso-$PGF_{2\alpha}$ in three patients during sepsis, recovery and state of health 441
C. Ekmekcioglu, B. Schweiger, G. Strauss-Blasche, G. Mundigler, P. Siostrzonek, W. Marktl

Increased cytosol Ca^{2+} and type 1 programmed cell death in Bcl-2-positive U937 but not in Bcl-2-negative PC-3 and Panc-1 cells induced by the 5-lipoxygenase inhibitor MK 886 443
K. M. Anderson, W. A. Alrefai, P. K. Dudeja, S. Jadko, P. Bonomi, Y. Hu, D. Ou, J. E. Harris

Antithrombotic effect of onion in streptozotocin-induced diabetic rat 453
Y.-S. Jung, M. H. Kim, S. H. Lee, E. J. Baik, S. W. Park, C.-H. Moon

Dendritic cells produce eicosanoids, which modulate generation and functions of antigen-presenting cells 459
H. Harizi, N. Gualde

Prostate cancer vs hyperplasia: relationships with prostatic and adipose tissue fatty acid composition 467
G. Mamalakis, A. Kafatos, N. Kalogeropoulos, N. Andrikopoulos, G. Daskalopulos, A. Kranidis

Chronic cocaine administration reduces phospholipase A_2 activity in rat brain striatum 479
B. M. Ross, S. D. Turenne

Downregulation of COX-2 and iNOS by amentoflavone and quercetin in A549 human lung adenocarcinoma cell line 485
T. Banerjee, A. Van der Vliet, V. A. Ziboh

The effect of Enalapril on PGI_2 and NO levels in hypertensive patients 493
G. Di Girolamo, E. González, D. Livio, A. R. de los Santos, M. L. Martí, M. A. F. de Gimeno

Effect of polyphloretin phosphate on the response of non-gravid rat uterus to 'folkloric' and 'standard' oxytocics in vitro 499
A. Adebiyi, R. N. V. Prasad, P. G. Adaikan

Threonine 11 of human NAD^+-dependent 15-hydroxyprostaglandin dehydrogenase may interact with NAD^+ during catalysis 505
H. Cho, H.-H. Tai

Post-suspension hypotension is attenuated in Sprague–Dawley rats by prostacyclin synthase inhibition 511
M. A. Bayorh, D. Eatman, M. Walton, R. R. Socci, N. Emmett

Green tea extracts can counteract the modification of fatty acid composition induced by doxorubicin in cultured cardiomyocytes 519
S. Hrelia, A. Bordoni, C. Angeloni, E. Leoncini, T. Gallina Toschi, G. Lercker, P. L. Biagi

Efficacy and specificity of non-steroidal anti-inflammatory drugs for the inhibition of cytokine-stimulated prostaglandin E_2 secretion by amnion-derived WISH cells 525
T. A. Sato, J. A. Keelan, M. Blumenstein, M. D. Mitchell

Effect of black tea on (iso-)prostaglandins and platelet aggregation in healthy volunteers 529
R. M. Wolfram, A. Oguogho, Y. Efthimiou, A. C. Budinsky, H. Sinzinger

Polyunsaturated fatty acids in maternal plasma and in breast milk 535
F. Marangoni, C. Agostoni, A. M. Lammardo, M. Bonvissuto, M. Giovannini, C. Galli, E. Riva

Desaturase activities are depleted before and after weaning in liver microsomes of spontaneously hypertensive rats 541
J. L. Savelli, M. Narce, V. Fustier, J.-P. Poisson

Estimated biological variation of the mature human milk fatty acid composition 549
E. N. Smit, I. A. Martini, H. Mulder, E. R. Boersma, F. A. J. Muskiet

Oxidative stress-induced isoprostane formation may contribute to aspirin resistance in platelets 557
A. Csiszar, G. Stef, P. Pacher, Z. Ungvari

VOLUME CONTENTS (VOLUME 67 2002)

The lipids that matter from infant nutrition to insulin resistance 1
U. N. Das

Red blood cell fatty acid profile of chronic renal failure patients receiving maintenance haemodialysis treatment 13
A. M. Koorts, M. Viljoen, M. C. Kruger

D-003, a potential antithrombotic compound isolated from sugar cane wax with effects on arachidonic acid metabolites 19
V. Molina, M. L. Arruzazabala, D. Carbajal, R. Más

The 5′ region of the human thromboxane A_2 receptor gene 25
T. Saffak, R. M. Nüsing

Efficacy of carnitine in the treatment of children with attention-deficit hyperactivity disorder 33
L. J. Van Oudheusden, H. R. Scholte

Nitric oxide synthase/PGE_2 cross-talk in rat submandibular gland 39
E. Borda, G. Heizig, L. Busch, L. Sterin-Borda

Long-term administration of beraprost, an oral prostacyclin analogue, improves pulmonary diffusion capacity in patients with systemic sclerosis 45
Y. Matsukawa, O. Saito, M. Aoki, M. Abe, S. Nishinarita, S. Sawada, T. Horie, S. Naruse, M. Hiranuma

Simultaneous quantification of prostaglandins in human synovial cell-cultured medium using liquid chromatography/tandem mass spectrometry 51
M. Takabatake, T. Hishinuma, N. Suzuki, S. Chiba, H. Tsukamoto, H. Nakamura, T. Saga, Y. Tomioka, A. Kurose, T. Sawai, M. Mizugaki

Rapid alterations of serum oxidant and antioxidant status with the intravenous administration of n-6 polyunsaturated fatty acids 57
E. J. Giamarellos-Bourboulis, S. Skiathitis, A. Dionyssiou-Asteriou, I. Donta, S. Hatziantoniou, K. Demetzos, G. Th. Papaioannou, G. Karatzas, H. Giamarellou

Introduction to the Conference 63
M. Manku, C. Galli

PUFA: METABOLIC ASPECTS

How fatty acids bind to proteins: the inside story from protein structures 65
J. A. Hamilton

Cellular fatty acid uptake is acutely regulated by membrane-associated fatty acid-binding proteins 73
J. J. F. P. Luiken, A. Bonen, J. F. C. Glatz

The roles of anabolic and catabolic reactions in the synthesis and recycling of polyunsaturated fatty acids 79
H. Sprecher

Regulation of PUFA metabolism: pharmacological and toxicological aspects 85
P. Risé, F. Marangoni, C. Galli

Intracellular lipid binding proteins and nuclear receptors involved in branched-chain fatty acid signaling 91
A. Adida, F. Spener

SELECTED METABOLIC AND FUNCTIONAL FEATURES OF LCP

Comparison of 20-, 22-, and 24-carbon n-3 and n-6 polyunsaturated fatty acid utilization in differentiated rat brain astrocytes 99
D. E. Williard, S. D. Harmon, T. L. Kaduce, A. A. Spector

Docosahexaenoic, arachidonic, palmitic, and oleic acids are differentially esterified into phospholipids of frog retina 105
R. E. Martin, S. A. Hopkins, R. Steven Brush, C. R. Williamson, H. Chen, R. E. Anderson

Interactions of n-3 fatty acids with ion channels in excitable tissues 113
A. Leaf, Y.-F. Xiao, J. X. Kang

Long-term potentiation in aged rats is restored when the age-related decrease in polyunsaturated fatty acid concentration is reversed 121
D. S. D. Martin, P. Spencer, D. F. Horrobin, M. A. Lynch

Potential role of polyunsaturates in seizure protection achieved with the ketogenic diet 131
S. C. Cunnane, K. Musa, M. A. Ryan, S. Whiting, D. D. Fraser

Androgens and fatty acid metabolism in X-linked Adrenoleukodystrophy 137
A. Petroni

A technique for the in vivo study of multiple stable isotope-labeled essential fatty acids 141
Y. Lin, N. Salem Jr

PUFA OXIDATION PRODUCTS: CHEMISTRY AND PATHOPHYSIOLOGY

Aldehydes from n-6 fatty acid peroxidation. Effects on aminophospholipids 147
M. Guichardant, N. Bernoud-Hubac, B. Chantegrel, C. Deshayes, M. Lagarde

Do changes in the cell membrane structure induce the generation of lipid peroxidation products which serve as first signalling molecules in cell to cell communication? 151
G. Spiteller

An oxidized derivative of linoleic acid affects aldosterone secretion by adrenal cells in vitro 163
T. L. Goodfriend, D. L. Ball, H. W. Gardner

Oxidized LDLs influence thrombotic response and cyclooxygenase 2 169
C. Banfi, S. Colli, S. Eligini, L. Mussoni, E. Tremoli

Mechanisms for reduction of endothelial activation by oleate: inhibition of nuclear factor-κB through antioxidant effects 175
M. Massaro, M. A. Carluccio, A. Paolicchi, F. Bosetti, G. Solaini, R. De Caterina

SELECTED PRODUCTS IN NUTRITION AND TOXICOLOGY

Cell signal mechanisms, conjugated linoleic acids (CLAs) and anti-tumorigenesis 183
K. W. J. Wahle, S. D. Heys

Modulation of lipid metabolism and vitamin A by conjugated linoleic acid 187
G. Carta, E. Angioni, E. Murru, M. P. Melis, S. Spada, S. Banni

Fatty acid ethyl esters: recent observations 193
Michael Laposata, Ali Hasaba, Catherine A. Best, Danita M. Yoerger, Brendan M. McQuillan, Raneem O. Salem, Majed A. Refaai, Britt L. Soderberg

Longitudinal prostaglandin E_2 generation in various organs during evolution of experimental portal hypertension 197
Z. Ackerman, F. Karmeli, D. Rachmilewitz

Polyunsaturated fatty acids in plasma and erythrocyte membrane lipids of diabetic children 203
T. Decsi, H. Minda, R. Hermann, A. Kozári, É. Erhardt, I. Burus, Sz. Molnár, Gy. Soltész

Defibrotide modulates prostaglandin production in the rat mesenteric vascular bed 211
H. A. Peredo

The fatty acid composition of the serum phospholipids of children with sickle cell disease in Nigeria 217
R. H. Glew, J. K. Casados, Y.-S. Huang, L.-T. Chuang, D. J. VanderJagt

Influence of conjugated vs. conventional linoleic acid on liver metastasis and hepatic lipidperoxidation in BOP-induced pancreatic cancer in Syrian hamster 223
M. Kilian, I. Mautsch, J. I. Gregor, P. Stahlknecht, C. A. Jacobi, I. Schimke, H. Guski, F. A. Wenger

The effect of prostaglandin E_2 (PGE_2) and long-chain polyunsaturated fatty acids (LC PUFA) on bone formation in piglets: a model for bone growth in nutritional investigation 229
A. Burke, H. Weiler

NS-398: cyclooxygenase-2 independent inhibition of leukocyte priming for lipid body formation and enhanced leukotriene generation 237
P. T. Bozza, P. Pacheco, W. Yu, P. F. Weller

Effect of peroxisome proliferator-activated receptor gamma on thromboxane A_2 and prostaglandin E_2 production in macrophage cell lines 245
T. Yamazaki, T. Yokoo, Y. Tomioka, H. Suzuki, T. Hishinuma, M. Mizugaki

Inhibitory effects of eicosapentaenoic acid (EPA) on the hypoxia/reoxygenation-induced tyrosine kinase activation in cultured human umbilical vein endothelial cells 253
Y. W. Zhang, X. S. Yao, S. Murota, I. Morita

Low-dose desmopressin infusion: renal action in healthy women in moderate salt retention and depletion, and interactions with prostanoids 263
G. C. Agnoli, R. Borgatti, M. Cacciari, P. Lenzi, M. Marinelli, L. Stipo

Erratum to 'Endocannabinoids and the gut' [*Prostaglandins Leukot Essent Fatty Acids* 2002; 66: 333–341] 275
Pinto et al.

Endothelial function in patients with peripheral vascular disease: influence of prostaglandin E1 277
T. Weiss, D. Fischer, D. Hausmann, C. Weiss

Highly unsaturated fatty acid induced tumour regression in glioma pharmacodynamics and bioavailability of gamma linolenic acid in an implantation glioma model: effects on tumour biomass, apoptosis and neuronal tissue histology 283
H. A. Leaver, S. B. Wharton, H. S. Bell, I. M. M. Leaver-Yap, I. R. Whittle

Lovastatin does not accentuate but is rather additive to palmitate-induced apoptosis in cardiomyocytes 293
J. Y. Kong, S. W. Rabkin

The effect of omega-3 fatty acids on Ca-ATPase in rat cerebral cortex 303
S. D. Kearns, M. Haag

Comments on "Relationship between thromboxane/prostacyclin ratio and diabetic vascular complications" 309
H. Sinzinger

Depression and adipose essential polyunsaturated fatty acids 311
G. Mamalakis, M. Tornaritis, A. Kafatos

cDNA cloning and expression of rat leukotriene C_4 synthase: elevated expression in rat basophilic leukemia-1 cells after treatment with retinoic acid 319
M. Abe, K. Shibata, S. Saruwatari, S. Soeda, H. Shimeno, T. Katsuragi

Influences of a dietary fatty acid composition on the emergence of glutathione S-transferase-P (GST-P) positive foci in the liver of carcinogen-treated rats 327
T. Sasagawa, K. Kosai, Y. Ota, M. Mori, M. Okita

Effect of giving up cigarette smoking and restarting in patients with clinically manifested atherosclerosis 333
F. Chehne, A. Oguogho, G. Lupattelli, B. Palumbo, H. Sinzinger

Investigation of antioxidant enzymes in the children with autistic disorder 341
O. Yorbik, A. Sayal, C. Akay, D. I. Akbiyik, T. Sohmen

Assessment of essential fatty acid and ω 3-fatty acid status by measurement of erythrocyte 20:3ω9 (Mead acid), 22:5ω6/20:4ω6 and 22:5ω6/22:6ω3 345
M. R. Fokkema, E. N. Smit, I. A. Martini, H. A. Woltil, E. R. Boersma, F. A. J. Muskiet

Autocrine/paracrine regulation of apoptosis in epithelial cells by prostaglandin E_2 357
H. N. Jabbour, R. W. Kelly, S. C. Boddy

Effect of NO synthase inhibition on cardiovascular and pulmonary dysfunction in a porcine short-term model of endotoxic shock 365
M. Albertini, C. L. Lafortuna, M. G. Clement, S. Mazzola, S. Radice, S. N. A. Hussain

Role of renal PGE_2 in the adaptation from foetal to extrauterine life in term and preterm infants 373
R. Agostiniani, P. Mariotti, L. Cataldi, V. Fanos, S. Sani, A. Zaccaron, L. Cuzzolin

Cyclooxygenase-pathway participates in the regulation of regional cerebral blood flow in response to neuronal activation under normo- and hypercapnia 379
R. A. Bakalova, T. Matsuura, I. Kanno

Maternal and umbilical fatty acid status in relation to maternal diet 389
S. R. De Vriese, C. Matthys, S. De Henauw, G. De Backer, M. Dhont, A. B. Christophe

Characterization and identification of cytochrome P450 metabolites of arachidonic acid released by human peritoneal macrophages obtained from the pouch of Douglas 397
K. Werner, W. R. Schaefer, H. Schweer, W. R. Deppert, U. Karck, H. P. Zahradnik

Induction of thromboxane A_2 synthesizing enzymes in DMSO-induced granulocytic differentiation of HL-60 cells 405
M. Zaitsu, E. Ishii, Y. Hamasaki

Interleukin-1beta in the functional and structural luteolysis. Relationship with the nitric oxide system 411
A. Estevez, T. Tognetti, B. Rearte, V. Sander, A. B. Motta

Transient experimental anemia in cholesterol-fed rabbits induces systemic overexpression of the reticulocyte-type 15-lipoxygenase and protects from aortic lipid deposition 419
F. Trebus, D. Heydeck, I. Schimke, C. Gerth, H. Kühn

The effect of dietary supplementation with n-3 polyunsaturated fatty acids on the generation of platelet-activating factor and leukotriene B_4 in hypoxic–ischemic brain in young mice 429
M. Akisu, A. Huseyinov, M. Baka, M. Yalaz, N. Kultursay

Suppression of cyclooxygenase-2 and inducible nitric oxide synthase expression by conjugated linoleic acid in murine macrophages 435
Y. Iwakiri, D. A. Sampson, K. G. D. Allen

Effects of endothelin-1 (ET-1) and thrombin antagonism on cardiovascular and respiratory dysfunctions during endotoxic shock in pig 445
M. Albertini, V. Borromeo, S. Mazzola, B. Ciminaghi, M. G. Clement

Nuclear receptor agonists stimulate release of arachidonic acid from rat liver cells 453
L. Levine

Inhibition of NAD^+-dependent 15-hydroxyprostaglandin dehydrogenase (15-PGDH) by cyclooxygenase inhibitors and chemopreventive agents 461
H. Cho, H.-H. Tai

Comparison of PGE_2, prostacyclin and leptin release by human adipocytes versus explants of adipose tissue in primary culture 467
J. N. Fain, A. Kanu, S. W. Bahouth, G. S. M. Cowan Jr, M. L. Hiler, C. W. Leffler

The use of ginger (*Zingiber officinale* Rosc.) as a potential anti-inflammatory and antithrombotic agent 475
M. Thomson, K. K. Al-Qattan, S. M. Al-Sawan, M. A. Alnaqeeb, I. Khan, M. Ali